

What is Claimed:

- 1 1. A method for treating contaminated soil and water comprising
2 the steps of:
 - 3 a) preparing a stable dispersion of zero-valent iron particles; and
 - 4 b) applying said zero valent iron dispersion to said contaminated soil
5 and water.
- 1 2. A method according to claim 1 including the preliminary steps
2 of:
 - 3 preparing a suspension iron particles having a maximum size of 10 μm
4 in an aqueous solution containing a dispersant being one of block or graft copolymers
5 containing both anchoring and stabilizing chains; and
 - 6 subjecting said suspension to a grinding or milling operation to
7 produce a solution containing said zero-valent iron particles.
- 1 3. A method according to claim 2 including the step of using one
2 of sodium polymethacrylate or ammonium polymethacrylate as a dispersant to
3 stabilize said colloidal containing zero valent iron particles.
- 1 4. A composition for treating contaminants in soil or water
2 consisting of:

3 a stabilized colloidal suspension of zero valent iron particles wherein
4 said zero valent iron particles have an average size less than 100 nanometers.

1 5. A composition according to claim 4 wherein said colloidal
2 suspension is stabilized by one of a block or graft copolymer containing both
3 anchoring and stabilizing chains.

1 6. A composition according to claim 5 including less than 1 to 2%
2 by weight of one of ammonium polymethacrylate and/or sodium polymethacrylate as
3 a stabilizer for said suspension.

1 7. A composition according to claim 4 wherein said suspension
2 includes up to 30% by wt iron particles.

1 8. A method for preparing a suspension of zero-valent iron
2 particles comprising the steps of:

3 preparing a stabilized dispersant of iron particles having a size no
4 larger than 10 μm ; and

5 grinding or milling said stabilized dispersant for a time sufficient to
6 reduce the size of the zero valent iron particles to a maximum size of 100 nm.

1 9. A method according to claim 8 including the step of introducing
2 one of a block or graft copolymer containing both anchoring and stabilizing chains
3 into said dispersant as a stabilizer.

1 10. A method according to claim 9 including the step of introducing
2 one of sodium polymethacrylate or ammonium polymethacrylate into said dispersant
3 as said stabilizer.

1 11. A method according to claim 10 including the step of using from
2 1 to 2% by weight of said ammonium polymethacrylate or said sodium
3 polymethacrylate to produce said stabilized dispersant.

1 12. A method according to claim 10 including the step of using up
2 to 30% by weight iron particles.